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| Lesson Title | **Hands-On Equations w/ Fractions and Mixed Numbers** |
| Subject/course/grade level | Hands-On Equations Math Kit- Algebra, Everyday Mathematics  5th grade |
| Introduction | When you hear the word “algebra” what do you think of? Share some ideas. |
| Lesson Length | 60 minutes-90 minutes |
| Materials | Yellow balance sheet, red number cubes, fraction squares, blue pawns, notes sheet, guided practice sheet, independent practice sheet, PowerPoint presentation, calculators |
| Lesson Overview | 1.Tap prior knowledge, evoke questions about algebra, connect to daily life.  2.PowerPoint for familiarity of materials and algebra vocabulary (equation, variable).  3.Pre-Question  4. Modeled, partner, and independent practice of equations.  5. Post-Questions, create your own problems using your materials (partner). |
| Tennessee Standards | Grade 5 Math Power Standard:  -Develop and apply the concept of an unknown variable to solve single-step equations.  -Solve multi-step problems using whole numbers, mixed numbers, decimals, and fractions.  State Performance Indicators:  6th grade-  SPI 0606.2.4 Solve multi-step arithmetic problems using fractions, mixed numbers, and decimals.  5th grade-  SPI 0506.3.1 Evaluate algebraic expressions involving decimals and fractions using order of operations.  SPI 0506.3.3 Find the unknown in single-step equations involving fractions and mixed numbers.  SPI 0506.2.5 Solve addition and subtraction problems involving both fractions and decimals.  SPI 0506.2.6 Add and subtract proper and improper fractions as well as mixed numbers.  4th grade-  SPI 0406.4.1 Use letters and symbols to represent an unknown quantity and write a simple mathematical expression.  SPI 0406.2.8 Add and subtract proper fractions with like and unlike denominators and simplify the answer.  SPI 0406.3.1 Use letters and symbols to represent an unknown quantity and write a simple mathematical expression. |
| Lesson Objectives | 1. Solve and check equations with fractions or mixed numbers for ***x*** using Hands-On Equations.  2. Define *variable* and *equation*.  3.Create problems using hands-on equations. |
| **E**ngagement | **Algebra Discussion/Balance modeling** (tap prior knowledge, spark interest, evoke questions)  Students share ideas, knowledge, and feelings about algebra. Students share ways they have used algebra in daily life situations.  Show students a balance, put object on it and add new object to keep it balanced  Ask-“What can I do to balance?” |
| **E**xploration | **Material Exploration and Pre Hands-On Equations Questions:**  Students will explore and become familiar with Hands-on equation materials and try to solve equations using the trial and error method with materials. |
| **E**xplanation | **Modeling the Skill and Guided Practice:**  The teacher will model problems from the guided practice sheet using hands-on equations materials. The teacher will also model thinking as she works problems. Students will practice setting up and working problems independently and with guidance. |
| **E**laboration | **Create “Hands-On Equations” problems with partner:**  With a partner, students will create their own algebra problems using the Hands-on equations kits. Students will check the problems and create an answer key for their problems. |
| **E**valuation | **Post Hands-On Equations Problems**:  Students solve 3 equations independently for “x” using their Hands-On Equations materials.  **Student created Hands-on equations problems/answer key** (from elaboration portion) |